RENEWABLES WORKING GROUP REPORT

Draft II, 7/9/96

I. INTRODUCTION

The California Public Utilities Commission's December 20, 1995 decision on electric industry restructuring (D.95-12-063 as modified by D.96-01-009) provides for the establishment of an enforceable "minimum renewables purchase requirement (MRPR)" within the overall resource mix supplying California's electricity. In its restructuring decision (p. 147), the Commission states a "commitment" to establishing policies that maintain California's resource diversity for existing resources and encourage the development of new renewable resources. California is the world leader in the development of renewable energy, and this leadership not only provides direct employment, environmental, and resource-diversity benefits to California, it also provides attractive opportunities for California businesses, both domestically and abroad. Effective implementation of a renewable energy support program within the context of a restructured, competitive electric market, will provide important energy, environmental, and economic benefits for California.

A Renewables Working Group formed on an ad hoc basis early in 1996 to address the major issues involved in the implementation of the California Public Utilities Commission's (CPUC) renewables policy. The group has been meeting on a bimonthly basis ever since, with a growing attendance that includes representatives from all of the renewable power industries, all of the major private and public electric utility companies in the state, power marketers, state agencies, and consumer and environmental advocacy groups. A list of Working Group participants is included in the appendices to this report. The group has defined the major points that a comprehensive renewables program will have to address, and has debated the many approaches advanced for the design of the program. This dialogue has led to a better understanding on the part of all parties about how a program can be structured to work.

From the beginning, it was acknowledged that no one approach to developing a renewables policy to implement the Commission's restructuring decision would be agreed to by all participants in the Working Group. The Working Group invited all interested parties to submit comprehensive program proposals for the implementation of the CPUC's renewable energy policy. The Working Group specifically requested ***comprehensive program*** proposals in order to avoid a circumstance in which it would have a collection of limited-purpose proposals addressing a variety of pieces of a renewables program, but no way to understand how the pieces would fit together into an integrated, total program. The group has received six comprehensive program proposals from participating parties. Five of the six comprehensive

program proposals present strategies for the implementation of the minimum renewables purchase requirement included in the CPUC's restructuring decision. The sixth proposal is for a surcharge-funded program that distributes renewable production credits on the basis of a competitive bidding process. The Working Group also received two adjunct proposals that seek to support specific types of technologies within the context of whatever overall renewables program is adopted. The eight proposals provide a variety of approaches to the development of a workable renewables policy for California, and illustrate the range of issues that must be addressed in formulating the program.

The Renewables Working Group report to the CPUC begins by setting the context for the development of a renewables policy in California by briefly reviewing the existing legal and regulatory framework within which the policy must fit. This review is followed by a presentation of data and information relevant to the current status of the renewable energy industry in California, including the presentation of data about renewable energy generation in the state during the 1990s. The second section of the report summarizes the Commission's renewables policy as articulated in the December 20, 1995 decision on restructuring, and the follow-up roadmap decision. A recitation of the major implementation issues identified by the Commission, and further issues identified by the Working Group, is provided.

The third section of the report presents abstracts of the six comprehensive program proposals and two adjunct proposals that have been received by the Working Group. The fourth section of the report analyzes the commonalities and differences among the proposals, and highlights areas of broad group consensus. The comprehensive proposals are presented in the fifth section of the report, and the adjunct proposals are included in the sixth section. Each proposal provides answers by the proposal sponsors to all of the implementation issues that are presented in Section II. Each proposal is followed by a series of one-hundred word statements submitted by Working Group participants commenting on the proposal, and indicating reasons for support or opposition. These statements help to identify the strengths and weaknesses of each proposal. The final section of the report contains appendices including a roster of Working Group participants and a list of acronyms, a more detailed presentation of data on California renewables provided by the CEC, and a qualitative consideration of the costs and benefits of renewable energy production in California.

A. Existing Law and Regulations

The Commission and California State Legislature have indicated that renewable resources provide environmental and fuel diversity benefits to California. Under Public Utilities Code Section 701.1(a), "a principal goal of electric . . . utility resource planning and investment shall be to minimize the cost to society of the reliable energy services that are provided by natural gas and electricity, and to improve the environment and to encourage the diversity of energy sources through . . . development of renewable energy resources, such as wind, solar, biomass, and geothermal energy." In calculating the cost-effectiveness of energy resources, the Commission is directed under Section 701.1(c) to include a value for any costs and benefits to the environment, including air quality. Section 701.4 makes it state policy for electric resource acquisition programs to recognize and include a value for the resource diversity provided by renewable resources. The Commission is further directed to set aside a portion of electric capacity needed for California renewable resources until it "completes an electric generation procurement methodology that values the environmental and diversity costs and benefits associated with various generation technologies." (Section 701.3) The Commission has indicated that portions of the public utilities code may change as restructuring proceeds.

In its restructuring decision, the Commission noted that the present mix of renewables on the system was driven by resource diversity interests on the part of utilities and the Commission's implementation of PURPA, which encouraged the growth of independent power production in general, and renewables in particular, during the 1980s. It is important to note that the existing laws and regulations, as well as the existing renewable energy industries in the state, developed within the context of the regulated monopoly utility structure that still is in effect in the state. The challenge is to create a program that will allow the renewable energy industries to adopt to a restructured electric utility environment based on the principle of competition.

B. Background on the California Renewable Energy Industries

Although many associate renewable energy development with the past twenty years, in fact renewable energy production in the form of hydroelectric generation has been a mainstay of California's electricity supply since the early development of the state's integrated electricity supply system. Indeed, the development of water and hydro resources has been a key component of the development of California's agriculture and industry. Many of California's public and private utilities own and operate their own hydro generating installations, and/or obtain power from a variety of state, federal, and privately-owned hydro-generating facilities, some located in California, others located out-of-state. In addition to hydroelectric generation, California has long been a pioneer in the development of geothermal energy. PG&E began development of the Geysers geothermal power resources in 1955, and has been a world leader in geothermal power generation ever since.

The latest chapter in the development of renewable generating sources in California began in 1978 with the passage of the federal PURPA legislation, which established the framework for the development of an unregulated, non-utility power generating industry in the U.S. PURPA required electric utility companies to purchase power from Qualifying Facilities, at the utility's "avoided cost" of power production. Concurrent changes in federal and California tax law provided strong incentives for private investors to invest in QFs, especially QFs using renewable resources. Renewable generating assets were made eligible for generous tax credits and accelerated depreciation provisions. In California, the implementation of PURPA policy, including the development and availability during the early 1980s of standard-offer power purchase contracts with long-term pricing terms for renewable generating sources, provided an environment in which renewable power development could flourish.

1. Growth of Renewables in California During the 1980s

California was a focal point for the development of renewable energy during the 1980s. The modern wind generating industry was spawned here. By the end of the decade, before development began to spread elsewhere, California had more than 95 percent of the world's installed wind generating capacity. Virtually all of the world's commercially operating solar-thermal electric generating capacity is in California, developed during the 1980s. California experienced the largest amount of solid-fuel biomass generating capacity development of any state in the country during the 1980s, and also saw a significant development of landfill gas and other biogas generating resources. California continued to be a leader in the development of geothermal generating sources during the 1980s, both in the utility and unregulated sectors of the market. Hydro development during this period moved into the private sector, with a shift away from mega-projects, and toward repowering opportunities and smaller projects.

Today, California is the world leader in the development of its renewable energy industries. No other place has experienced the amount and diversity of renewable energy development that has occurred in California. But this success has not come about without costs, including a trail of failed projects and dashed expectations, and currently above-market costs for many facilities. California has learned its lessons in the development of the renewable energy industries, and it is important to incorporate these insights into policies for the next century.

2. Renewable Energy Production in California During the 1990s

The following three tables contain disaggregated data on California renewables generation and California renewables supply for the 1990 to 1994 period. Data for 1995 is not yet available. Utility-owned renewables, renewable QF-sales, renewable self-generation, and renewables imports are all estimated, and renewable resource-specific data are provided. In addition, data on total generation, retail sales, and retail revenues are also listed. This data is supplied by the Renewables Working Group to both respond to the CPUC's direction and so that each of the proposals contained in this report will use a consistent set of data to define their proposals.

The first table lists statewide data. The second table lists the same categories data, but covers only the aggregate data for the IOU's serving California load. The final table again lists the same categories of information, but only for other (non-IOU) utilities serving California load (i.e., public utilities). Appendix B, supplied by the California Energy Commission, lists utility-specific renewables data for the three largest IOUs serving the state (SCE, SDG&E and PG&E).

The renewables data contained in these tables was obtained by a joint effort of the California Energy Commission and the three largest IOUs (SCE, SDG&E, and PG&E). Each of these IOUs submitted confidential[1] data to the CEC on utility generation, QF purchases, and imports. CEC staff provided similar data from the CEC's database (whose sources include FERC forms, the CEC's Quarterly Fuels and Energy Report data-base, and the IOUs' quarterly small power production reports to the CPUC), in addition to estimates for self-generation (checked against IOU estimates, when available). Given the amount of estimation involved in the compilation of the available data for this pupose, the data contained in these tables should be considered estimates rather than a precise compilation of measured actual generation. The IOU-specific data supplied in Appendix B comes solely from public CEC sources, and therefore differs from that provided in this section. Specifically, the data contained in the Appendix was not validated by the IOUs, and is therefore not as accurate as the data supplied here.

In the three tables, renewables generation is disaggregated by resource type, including hydroelectric, geothermal, wind, biomass, and solar. Where appropriate, distinctions are made between in-state renewable energy facilities and out-of-state facilities serving California load. The solar thermal generation data applies a 25% derating factor to the total output of the solar thermal power-plants to account for natural-gas back-up. An estimate for the amount of Pacific

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[1] Confidentiality constraints to protect independent producers selling energy to the IOUs require that the data for the three large IOUs not be reported by individual utility. Therefore, all utility-specific data supplied by the IOUs to the CEC is confidential. The CEC used this confidential data to create the aggregate IOU data provided in the second table.

Northwest hydro imported into the state is obtained by assuming 80% of the total economy energy imports comes from hydroelectric facilities.

TABLES 1 - 3: Not received in time to incorporate into this draft. When received, these tables will be included here. Until then, please refer to a previous fax by the CEC which contains these data tables.